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IS 12873 (1990): Copper Oxychloride OP [FAD 1: Pesticides and Pesticides Residue Analysis]

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Indian Standard

COPPER OXYCHLORIDE OP — SPECIFICATION

भारतीय मानक

कॉपर आक्सीक्लोराईड ओ पी — विशिष्टि

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

June 1990

Price Group 2

AMENDMENT NO. 1 MARCH 1991
TO
IS 12873 : 1990 COPPER OXYCHLORIDE OP — SPECIFICATION

(*Page* 3, *clause* **B-1.1**) — Substitute the following for the existing sentences:

(*Sentence* 5) — 'Make up the total volume to 40 ml with diluent oil.'

(*Sentence* 7) — 'At the end of the settling period (60 minutes) withdraw 30 ml of suspension from the top using a glass nozzle connected to a vacuum pump, retaining 10 ml at the bottom of the cylinder.'

(*Sentence* 9) — 'Add more volume of nitric acid till complete dissolution of copper oxychloride is achieved.'

(*Sentence* 12) — 'Wash repeatedly the oil layer in separating funnel with nitric acid to extract all the remaining copper oxychloride into the acid layer.'

(*Sentence* 13) — 'Transfer the acid layer with the flask and make up the volume to the mark.'

(*Page* 3, *clause* **B-2**) — Substitute the following for the existing matter:

'W_2 = copper content of 10 ml of material left in the cylinder.'

(FADC 1)

Printed at Progressive Printers, Delhi, India

AMENDMENT NO. 2 OCTOBER 1991
TO
IS 12873 : 1990 COPPER OXYCHLORIDE OP — SPECIFICATION

(*Page* 2, *clause* A-3.1, *line* 2) — Substitute '99.5-100°C' *for* '99.5-110°C.'

(FADC 1)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 3 MAY 1994
TO
IS 12873 : 1990 COPPER OXYCHLORIDE OP — SPECIFICATION

(*Page* 1, *clause* **6.1**) — Substitute the following for the existing:

'When freshly manufactured material in bulk quantity is offered for inspection, representative samples of the material shall be drawn and tested as prescribed in IS 10627 : 1983 within 90 days of its manufacture. When the material is offered for inspection after 90 days of its manufacture, sampling shall be done as prescribed in IS 10627 : 1983. However, the criteria for conformity of the material when tested, shall be the limits of tolerances, as applicable over the declared nominal value and given under clause **3.4** of the standard.'

Page 3, *Annex B, clause* **B-1.1** of the Standard would be read as:

'7 g of the material is completely dispersed in 20-25 ml spray oil in a 100-ml beaker and quantitatively transferred into a 50-ml graduated cylinder. The beaker is washed with 5 -10 ml spray oil into the cylinder and the total volume is made up to 40-ml mark with spray oil. Suspensibility test is carried out by 20 times sharp inversions of the cylinder followed by 60 minutes rest. Top 30 ml of the suspension is drawn out and copper content is estimated in the remaining 10 ml by extraction with nitric acid.'

(FAD 1)

Reprography Unit, BIS, New Delhi, India

Pesticides Sectional Committee, FAD 1

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 23 February 1990, after the draft finalized by the Pesticides Sectional Committee had been approved by the Food and Agriculture Division Council.

Copper oxychloride OP is largely used as fungicide for the control of plant diseases. It is used, in particular, in rubber plantations.

Copper oxychloride OP is generally manufactured to contain either 40 or 50 or 56 percent (*m/m*) of copper.

In the preparation of this standard, due consideration has been given to the provisions of the *Insecticides Act, 1968* and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*).' The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

COPPER OXYCHLORIDE OP — SPECIFICATION

1 SCOPE

1.1 This standard prescribes the requirements and methods of sampling and test for copper oxychloride OP.

2. REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard :

IS No.	*Title*
IS 261 : 1982	Specification for copper sulphate (*second revision*)
IS 1070 : 1977	Specification for water for general laboratory use (*second revision*)
IS 1486 : 1978	Specification for copper oxychloride, echical (*second revision*)
IS 1506 : 1977	Specification for copper oxychloride dusting powder (*second revision*)
IS 8069 : 1989	Specification for high density polyethylene (HDPE) for packing of pesticides (*second revision*)
IS 8190 (Part 1) : 1988	Requirement for packing of pesticides : Part 1 Solid pesticides (*second revision*)
IS 10627 : 1983	Method for sampling of pesticidal formulations.

3 REQUIREMENTS

3.1 Constituents

3.1.1 Copper oxychloride, technical employed in the formulation of this material shall conform to IS 1486 : 1978.

3.1.2 The spray oil shall not contain less than 70 percent by volume of unsulphonated residues when tested by the method given in Annex A.

3.2 Description

The material shall be in the form of free flowing homogeneous powder devoid of hard lumps and bluish green colour. It shall wet readily on mixing with spray oil, providing a suspension suitable for use as a spray.

3.3 The material shall also comply with the requirements given in Table 1.

Table 1 Requirements for Copper Oxychloride OP

Sl No.	Characteristic	Requirement	Method of test, Reference to
(1)	(2)	(3)	(4)
i)	Copper content, percent by mass	Nominal value as declared on the container (*see* **3.4**)	Appendix A of IS 1506 : 1977
ii)	Suspensibility, percent by mass, *Min*	85	Annex B of this standard

3.4 Copper Content

When determined by the method prescribed in Appendix A of IS 1506 : 1977, the observed copper content, percent (*m/m*), of any of the samples shall not differ from the declared nominal value by more than the tolerance limits indicated below:

Nominal Value, percent	*Tolerance Limit, percent*	
Up to 9	+ 10 − 5	of the nominal value
Above 9 and below 50	± 5	
50 and above	+ 5 − 3	

3.4.1.1 The actual value of copper content shall be calculated to the second decimal place and then rounded off to the first decimal place before applying the tolerances given in **3.4.1**.

3.4.1.2 The average content of all samples taken shall be not less than the declared nominal value.

4 PACKING

4.1 The material shall be packed in HDPE woven sacks conforming to IS 8069 : 1989, 13 kg nominal capacity. In addition, according to the requirements given in **2.1** of IS 8190 (Part 1) : 1988.

5 MARKING

5.1 The container shall bear legibly and indelibly the following information and any other information as is necessary under the *Insecticides Act, 1968* and Rules framed thereunder.

a) Name of the material;
b) Indication of the source of manufacture;
c) Date of manufacture;
d) Batch number;
e) Net mass of the contents;
f) Copper content percent (*m/m*); and
g) A cautionary notice worded as in the *Insecticides Act* and Rules.

6 SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in IS 10627 : 1983.

7 TESTS

7.1 Tests shall be carried out by the appropriate methods referred to in col 4 of Table 1 and **3.4**.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Clause* 3.1.2)

DETERMINATION OF UNSULPHONATED RESIDUE (USR) OFSPRAY OILS

A-1 APPARATUS

A-1.1 Sulphonation Flask, *see* Fig. 1.

A-1.2 Centrifuge

A-2 REAGENTS

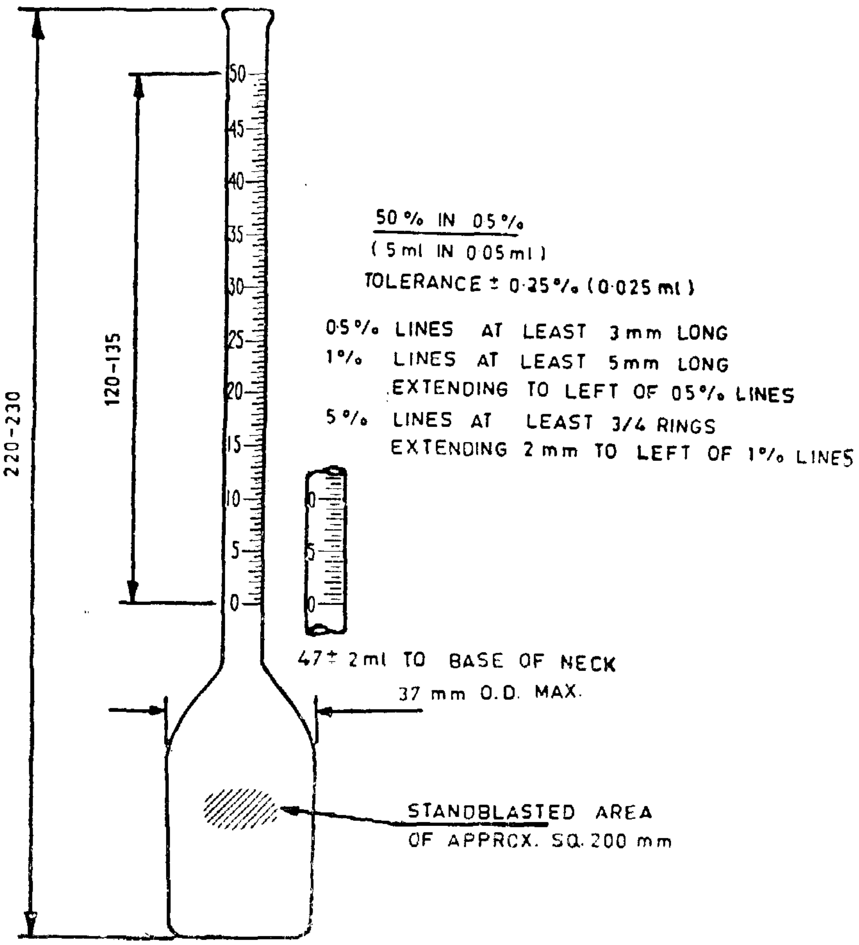
A-2.1 Sulphuric Acid, 98·61 percent (prepared by mixing oleum and concentrated sulphuric acid).

A-2.2 Sulphuric Acid, Concentrated, 95 percent by volume.

A-3 METHOD

A-3.1 Adjust the temperature of the boiling water bath to 99·5 — 110°C and maintain the temperature throughout the experiment. Determine the density of the sample. Weigh 4·9 to 5·1 g of the sample accurately to the nearest 0·005 g using a pipette. Calculate the volume of the sample

A-3.2 Slowly introduce 20 ± 0·5 ml of sulphuric acid (**A-2.1**) in such a way that oil if any adhering to the neck of the sulphonation flask will be washed down. Transfer the flask to the boiling water bath, immersing to a point



50
45
40
35
30
25
20
15
10
5
0
220-230
120-135
50 % IN 0·5 %
(5 ml IN 0·05 ml)
TOLERANCE ± 0·25 % (0·025 ml)
0·5 % LINES AT LEAST 3 mm LONG
1 % LINES AT LEAST 5 mm LONG
EXTENDING TO LEFT OF 0·5 % LINES
5 % LINES AT LEAST 3/4 RINGS
EXTENDING 2 mm TO LEFT OF 1 % LINES
0
5
0
47 ± 2 ml TO BASE OF NECK
37 mm O.D. MAX.
STANDBLASTED AREA
OF APPROX. SQ. 200 mm

All dimensions in millimetres.

FIG. 1 SULPHONATION FLASK

between 0 and 10 marks. Note the time of immersion.

A-3.3 After 10 minutes, remove the flask from the water bath and shake at the rate of 7 to 8 shakings per second for 10 seconds. Return the flask to the bath as quickly as possible. Repeat the shaking at 10 minutes intervals for a total of 6 shakings so that an hour is elasped between the time of placing the flask in the bath and removal for final shaking.

A-3.4 Cool the flask to room temperature and add sufficient sulphuric acid (**A-2.2**) to raise the oil level to the neck of the flask nearly to the top graduation. Centrifuge the flask for 10 minutes at 1500 rotations per minute. Transfer the flask to a water bath maintained at 25 ± 0·5°C. Using a suitable light source and viewing lens, record the reading on the graduated neck at the top (A) and bottom (B) of the oil column accurately. Repeat centrifuging and temperature equilibrium until constant readings are obtained.

A-4 CALCULATION

Unsulphonated residues, percent by volume

$$= \frac{(A - B)}{V} \times 100$$

where

A = corrected scale reading at upper oil level in ml;

B = corrected scale reading at lower oil level in ml; and

V = volume of sample in ml.

ANNEX B

[*Table* 1, *Item* (ii)]

DETERMINATION OF SUSPENSIBILITY

B-1 METHOD

B-1.1 Weigh 7 g of the material in a 100-ml beaker containing 20 to 25 ml of spray oil and disperse gently. Transfer the material dispersed in oil to a 50-ml graduated cylinder fitted with a ground glass stopper and marked clearly at 10-ml level. The mouth of the cylinder shall be without any constriction. Use 5 to 10 ml of spray oil for washing out remaining quantity of sample from the beaker into the cylinder. Make up the total volume to 50 ml with diluent oil. Invert the cylinder sharply 20 times to have uniform suspension and allow to rest for 60 minutes (the bench on which the cylinder is placed should be protected from vibrations). At the end of the settling period (60 minutes), withdraw the 30 ml of suspension from the top using a glass nozzle connected to a vacuum pump, retaining 20 ml at the bottom of the cylinder. Then transfer the contents of the cylinder completely into a 250-ml beaker using nitric acid (1 : 1, v/v). Add more volume of nitric acid till complete dissolution of copper oxychloride. Then heat the contents on a water bath till the oil layer assumes its original colour. Transfer the contents into a separating funnel quantitatively and transfer the lower layer into a 250-ml Erlenmeyer flask. Wash repeatedly the oil layer in separating funnel with nitric acid to extract all the remaining copper oxychloride nto the acid layer. Transfer the acid layer into the flask and make the mark. Take 20 ml of the solution into a 500-ml iodine flask and estimate copper content as per procedure given in Appendix A of IS 261 : 1982.

B-2 CALCULATION

Suspensibility, percent by mass

$$= \frac{W_1 - W_2}{W_1} \times 100 \times \frac{4}{3}$$

where

W_1 = copper content in the material taken for suspension;

W_2 = copper content of 20 ml of material left in the cylinder.

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